

New maintenance coatings offer major benefits

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Some well-known difficulties have plagued painting projects for generations. Success for a project using traditional coatings has required answers to such questions as: "Is the surface clean enough? Is it dry enough? Is it in an acceptable temperature range? Will drying time pose a problem?" And nowadays, "Will the preparation, coating, and its application meet OSHA and EPA requirements?"

The same questions still have to be answered in working with new coatings being offered. The difference is that newer products allow a much wider range of acceptable answers.

Surface tolerance

Proper surface preparation remains the cornerstone of a successful painting project. Many, if not most, coating failures arise from improper preparation.

In an ideal world, all prep work is done properly.

In the real world, some surfaces are difficult to prepare. Others require unique specifications. Sandblasting, a major traditional tool, is now restricted because of debris released into the atmosphere. Finally, budget constraints can hurt because surface preparation usually represents a considerable portion of project cost.

New coatings help overcome these difficulties by tolerating a broader range of surface conditions.

Rust

The battle against rust is almost as old as the use of iron and steel. Coatings are now available that tolerate various amounts of surface rust. These formulations utilize *penetration*, *chemical conversion*, and *encapsulation* to permit successful application. They eliminate much of the time-consuming, expensive, and difficult-to-control rust removal work that is mandatory for successful application of traditional coatings.

Contamination

Compatibility with a certain amount of surface contamination is a hallmark of new coating formulations such as surface tolerant epoxies. Common examples of contamination are grease, grime, oxidized old coatings, and airborne deposits. Surface cleaning is still often necessary, but the degree of cleanliness required isn't as extreme as with traditional coatings.

Environment tolerance

In addition to static surface conditions like rust and dirt, the environment of a surface can impose other conditions. These may vary with time. Temperature and moisture are prime examples.

Temperature

Extreme temperatures have long been considered adversarial to application of maintenance coatings. Now, low-temperature products can be applied in sub-zero temperatures, while high-temperature products actually depend on extreme heat to complete the curing process.

Moisture

Surface moisture, usually condensed from the air, has spelled doom for many a coating job. The film of moisture, often not visible to the naked eye, seri-

Key concepts

Coating manufacturers have significantly improved their products.

Two major improvements are application related: surface and environment tolerance.

Coating selection, surface preparation, and application details remain important.

BEFORE



Brightening a dingy ceiling is a common way to improve productivity and morale.

AFTER



ously interferes with the bonding of traditional coatings. Also, moisture condensation soon after coating application often results in “blushing” (a blotchy appearance). Now, moisture-cured urethane formulations thrive in damp environments.

Drying times

Drying and curing times are frequently a critical concern. In the past, long cure windows of alkyd products required prolonged shutdowns and lost productivity.

Now, ultrafast solvent based products and advanced acrylics provide significantly decreased cure times. Some of these coatings dry to the touch in as little as 20 min, others take up to 12 hr.

Regulatory compliance

Painting projects can involve two types of regulatory compliance issues: people and environment.

People concerns, governed by OSHA, relate both to the painting crew that does prep or application work and to other employees who may be exposed. Traditional coating formulations often pose greater fume hazards than newer versions.

Environment concerns range from disposal of any material (such as preparation debris) to release of

volatile organic compounds (VOCs) into the atmosphere. EPA and/or state agencies oversee these matters. Newer products not only help to meet environmental requirements, they sometimes are the only way the job can be done.

To contract or not?

If you have professional painters on staff, these questions will help determine whether or not to hire a contractor for a project.

- ❖ Can our crew handle the project?
- ❖ What are our budgetary constraints?
- ❖ Why did the previous coatings fail?
- ❖ What preparation is necessary?
- ❖ Can we maintain production and complete the painting?
- ❖ Does our crew/

Scenario #2

Area: Inline plastic cup plant

Environment: Grease

Substrates: Interior steel machinery

Conditions: Previous coatings yellowing and failing, rust, bare galvanized metal; restricted budget

Solution (Cannot afford complete removal of previous coatings): Degrease oily areas, hand-tool clean any loose materials and rusted areas. Apply one coat of surface tolerant epoxy mastic intended for marginally prepared surfaces.

Scenario #3

Area: Soybean and linseed oil processing plant with insulated outdoor storage tanks

Environment: Old tank coating weathered and heavy oily extract present

Substrates: Steel and other metals, under insulation

Conditions: Rust and oily deposits

Solution: Remove insulation jacket. Commercial blast clean to SSPC-SP6. Prime with two coats of high performance interior/exterior, VOC compliant, high solids rust inhibitive catalyzed polyamide epoxy steel primer. Finish with one coat of a VOC-compliant, general-purpose industrial polyamide epoxy coating.

Examples of modern coating use

Scenario #1

Area: Bottled water processing plant

Environment: 95% relative humidity

Substrates: Steel, aluminum, and masonry block

Conditions: Previous coatings failed, pitted rust, rust bleed, and saturated substrate

Solution: For steel substrates, total coating removal to SSPC-SP9 (near white blast). For masonry and aluminum, power wash with rotating tip. Apply one coat moisture-cured preprime to steel. Apply one coat moisture-cured aliphatic aluminum primer to aluminum and masonry. Apply two finish coats of moisture-cured aliphatic urethane to all surfaces.

the contractor have knowledge of the coatings and the tools needed to apply them?

- ❖ Does the contractor provide the additional advantage of a warranty?

If you contract...

The key to a successful painting project is communication between plant management and the painting contractor. That's always been true, but in order to gain the benefit of modern coating technology it's as important as ever to have clear understandings regarding surface preparation, surface and environmental conditions, drying time, and applicator safety.

Every plant has its own unique set of environmental elements, such as moisture, vapors, and contaminants. Surfaces like ceilings, walls, piping, and machinery are best known by personnel working around them. The contractor should confer with these people to help determine exposure factors that aren't obvious.

A contractor should be able to show that proper

training and, where appropriate, certifications, have been obtained for such items as confined space work, aerial work, and respirator health and safety. Although a safe environment for workers is everyone's concern, the contractor must have particular health and safety knowledge for all products to be used.

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More info

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